

San José State University Research Foundation Annual Report 2014-2015

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Cover Photos

1. Student Stephanie Luu is using image analysis software to measure the areas of different sessile invertebrate species (including sea squirts and bryozoans) that have grown on a settlement panel that was suspended in a shallow bay for five weeks. The blue frame in the monitor is a copper-based antifouling paint, supplying dissolved copper as a means of testing the tolerance of different organisms. Copper is widely used to prevent organisms from growing on hulls, which presents the question - does evolution of genetic tolerance play a large role in allowing certain species to invade coastlines?
2. Dr. Miri VanHoven and researcher Raakhee Shankar examine *C. elegans* nematodes with mutations in genes that they have discovered to regulate neural circuit formation. Raakhee Shankar earned a master's degree at SJSU and is doing research full-time in Miri VanHoven's lab while interviewing with graduate schools.
3. DNA from uncultured bacteria associated with human diseases is being visualized using gel electrophoresis. The DNA is labeled with a dye that fluoresces in the visible spectrum of light. Courtesy of Cleber Ouverney, Ph.D.
4. Model of the Spartan Superway cabin, which will be suspended above city streets with bidirectional travel capable of speeds up to 50 mph.
5. Microscopy eyepieces of a Zeiss AxioObserver, a compound inverted microscope used for microinjection.
6. California sea lion on San Nicolas Island that is instrumented with a time depth recorder to record diving behavior and a data logger that measures the oxygen in the blood, allowing the study of how they are able to dive for extended periods of time. Photo by Birgitte McDonald, Ph.D. under National Marine Fisheries Permit #14676.
7. Student Alexander Shmurakov is working on an iPad to conduct geomorphic field mapping of offset alluvial fans on the Elsinore fault, part of the San Andreas fault system, in the Anza Borrego Desert of southern California.
8. Flow cytometer Canto II, using a laser based technology that allows multi parameter fluorescence analysis. It is used to characterize cells according to their biomarker expression. This information is useful in the diagnosis of clinical conditions and immunology research.
9. Student Man Ho is making adjustments to the test vehicle for a 1/12th scale model of a solar-powered automated transit network under development at SJSU, the Spartan Superway.

A Note from...



Provost Andrew Hale Feinstein

As Provost and board president of the SJSU Research Foundation, I am always excited to learn about the amazing research, scholarship and creative activity (RSCA) our students and faculty pursue.

This year, SJSU established student success as our top priority and RSCA remains a steadfast component of our Academic Affairs strategic plan. RSCA and student success go hand in hand, as faculty who maintain currency and bring passion into their classrooms are able to better engage students and excite them about learning. Research can also help us develop best practices for student success, such as the First in the World grant that focuses on improving instructional methods in STEM and the Asian American, Native American, Pacific Islander Serving Institution grant that provides writing support for our students.

We know high-impact practices, including undergraduate research, improve student learning and support student retention, but faculty also benefit from students as research assistants. Together, students and faculty are making a global impact, engaging in research in places such as Vietnam and Pakistan. Others are focused closer to home on projects that support health through laboratory work on pertussis and periodontal disease, along with many other lines of inquiry.

I applaud our faculty for their commitment to engaging students in their research along with attracting public and private funding to support regional, national and global collaborations. I am committed to the continued growth of the SJSU research enterprise and the role of the SJSU Research Foundation in supporting our campus.

A stylized, handwritten signature in black ink, appearing to be 'A. Feinstein'.



Executive Director Sandeep Muju

During my first year as executive director of the Research Foundation, I have been amazed at the diversity and depth of the research enterprise at San José State University.

For this reason we are featuring five wide-ranging themes in this annual report: global engagement, bioscience and health, field studies, next generation transportation, and programs directly contributing to student success. The projects and researchers profiled here are not only making an impact on their respective fields, they are genuinely engaging students in practical research that enriches their education and builds the skills they will need to succeed in the workforce of the future.

We are also pleased to introduce you to the student researchers who successfully competed at the CSU Student Research Competition as well as those who are engaged in immersive entrepreneurial activities that parallel fast-paced professional engineering environments.

All of these successes inspire us in our work at the Research Foundation. We are committed to providing our researchers with excellent administrative services and support. By providing these services to the University research enterprise we are helping pave the way for further successes in research, scholarship and creative activities (RSCA) across the University.

I am proud to be heading this organization and to be leading our dedicated employees in supporting the University's commitment to RSCA and thereby supporting and advancing the University's larger mission.

A stylized, handwritten signature in black ink, appearing to be 'S. Muju'.

Around the World

Faculty researchers are making an impact across the globe.

Building a Social Work Infrastructure in Vietnam

In collaboration with universities across Vietnam, Alice Hines and a team of SJSU faculty have developed rigorous and cutting edge programs of social work training and education, with the goal of meeting that country's need for highly skilled professional social workers.

Partners in the Social Work Education Enhancement Program (SWEEP) include San José State University, eight universities in Vietnam, Vietnam's government ministries, Cisco Systems, Inc., and US Aid for International Development (USAID), which provided funding for the program.

"Even though it is a communist country, Vietnam has developed a strong free market economy," explains Dr. Hines. "As a result there has been a migration of people from rural to urban areas. In many cases women and children are left behind, the family breaks down, and consequently we are seeing problems similar to those we see as social workers in the United States: domestic violence, child and elder abuse, and substance abuse."

The project's primary focus is to strengthen Vietnam's undergraduate social work education programs to prepare trained, job-ready social workers. To do so, SWEEP program leaders have developed the professional social work knowledge of Vietnamese university faculty, delivered a comprehensive social work curriculum, and implemented Cisco technology to facilitate networking among participating universities and social work agencies. Cisco technology is also used for monthly teleconferences with the leaders of the participating universities, which are located in major cities as well as outlying rural areas.

The SJSU SWEEP team includes five faculty members, experts from the School of Social Work and the School of Information: Ed Cohen, Laurie Drabble, Meekyun Han, Soma Sen, and Debbie Faires, and administrative assistant Quyen Grant. The team also includes three staff based in the SWEEP Hanoi office: Tuan Tran, Hoa Nguyen, and Thao Nguyen.



*School of Social Work, College of Applied Sciences & Arts
Sponsor: USAID Vietnam*

Chinese Real Estate Company Explores Silicon Valley Hotel Market

When a real estate company in China sought to diversify its business into the hotel industry, it initiated a search for information about investing in an active hotel market: Silicon Valley. A referral from a mutual colleague in Beijing led the company's CEO to Yinghua (Michelle) Huang in SJSU's Department of Hospitality Management.

The company provided funding for Dr. Huang to evaluate the Silicon Valley hotel market. In examining the industry, she researched business performance in different hotel

segments based on star ratings. She also forecasted market trends in each segment, and looked at the competitiveness of hotel brands already operating in the area. Projection of income and expense for establishing a new upscale hotel in San José was included as well. The methods applied in this project were based on market research and hotel valuation techniques.

Dr. Huang teaches courses relating to hotel revenue management and marketing in the hospitality and tourism industry.



*Department of Hospitality Management,
College of Applied Sciences & Arts
Sponsor: Dalian Dianye Real Estate Development Co. Ltd.*

An Historic Linguistic Exchange with Pakistan Universities

In an exceptional exchange of scholarship, ideas, and culture, SJSU is supporting the development of a world-class applied linguistics center at the University of Azad Jammu and Kashmir (UAJK) in Pakistan. Led by Linguistics and Language Development Department Chair Swathi Vanniarajan and Co-PI Soteria (Roula) Svorou, the PALEEP project (Pakistan English Linguistics Education Enhancement Program) is enhancing UAJK's linguistics curriculum and research capacity through collaborative research, resource sharing, distance education, and professional development for UAJK professors.

Faculty exchanges are a key component of the program. Dr. Vanniarajan and Dr. Svorou have made multiple trips to UAJK campuses. Both have been named adjunct faculty at UAJK – a rare honor – and officially take part in faculty research there.

Of even greater significance, eight UAJK faculty members have made trips to SJSU since 2013, and three more will spend the entire Spring 2016 semester here. For most of these visitors, the trip included their first flight, their first access to a major library facility (Dr. Martin Luther King, Jr. Library), and their first exposure to another country's social, political, and academic culture.

Response from the visitors has been wholly positive. As one professor reflected,

"I frequently talked to the SJSU professors and students. These productive encounters provoked inspiration and motivation in me alongside familiarizing me with the American way of academic business and pedagogy. After all these interactions it was quite natural for one to revere the country's academic standing."

*Department of Linguistics & Language Development, College of Humanities & the Arts
Sponsor: U.S. Department of State (Initial grant awarded to Peter Young and Swathi Vanniarajan)*



Speech-Language Pathology Students in Pacific Islands Obtain SJSU Master's Degrees

A master's level distance-learning program developed by SJSU professors June McCullough (left) and Wendy Quach (right) is providing training for 20 speech-language pathology graduate students who reside on islands across the Pacific Ocean. Upon completion of the program, these trained clinicians will provide speech therapy services to children living on the islands, which include Guam, the Northern Mariana Islands, the Federated States of Micronesia, the Republic of Palau, and the Republic of the Marshall Islands.

A severe shortage of qualified speech-language professionals in these locations led to the project's grant award and subsequent program development.

"Our graduates will provide services

to underserved children in their own communities," explains Dr. McCullough. "They will gain the theoretical and clinical skills to improve educational outcomes for children with speech disabilities. Without early intervention services, these children may never be able to reach their personal best in the classroom."

Advanced technology for conferencing has expanded the reach of the program to remote sites on these islands. From their own countries, students can attend classes taught by SJSU professors live, which many do, or they can stream the professors' presentations at any point after the live class ends. The program does require that students spend one semester on site at SJSU during the program, during which they will take part in full-time externships.



*Project EPICS – Educating Pacific Island Clinicians in Speech
Department of Communicative Disorders and Sciences,
Connie L. Lurie College of Education
Sponsor: U.S. Department of Education, Office of Special
Education Personnel*

Health Sciences & Wellness

Whether in laboratory or on the front lines in the community, these researchers seek healthy outcomes for all.

Following Neural Pathways

In Miri VanHoven's research lab, she and her students seek to understand how neural circuits are formed and maintained. Neural circuits are part of a relay of neurons that connect and communicate with one another throughout the body. These functional components of the nervous system control perception, such as sight and smell, as well as thought and physical movement.

"We know a great deal about how neural circuits function, but less about their formation and modification," Dr. VanHoven explains. "Our lab is exploring the molecular processes that govern the steps of formation and growth, as well as how sensory experience shapes and maintains these circuits later in life."

Dr. VanHoven has three main projects in her laboratory. The first seeks to understand how neuronal axons terminate outgrowth in appropriate regions. The second aims to

discover molecular mechanisms by which neurons recognize the correct partners. The third is focused on understanding the mechanisms by which sensory signaling modifies and maintains synapses. Understanding these processes could lead to a better understanding of disorders such as autism, schizophrenia, and dementia.

While Dr. VanHoven hopes that her long-term research leads to scientific discoveries, she embraces the rewards she finds in teaching. "The allure of curing diseases is strong," she says. "I hope my discoveries will lead to something important medically five or ten or twenty years down the road. But part of me wants to make a difference right away – that is the part that is satisfied by educating and working with students."

*Department: Biological Sciences, College of Science
Sponsors: National Institutes of Health (NIH),
National Science Foundation (NSF)*

"Part of me wants to make a difference right away – that is the part that is satisfied by educating and working with students."

- Miri VanHoven



Exploring Environmental Bacteria



If you spend a little time learning about Cleber Ouverney's microbiological research into periodontal bacteria, you may decide to visit your dentist sooner rather than later.

Dr. Ouverney began his Ph.D. studies by examining bacterial diversity in the oceans. He noticed that a number of the marine bacteria he was studying had a counterpart in the human body. He investigated this relationship between environmental and human bacteria during his post-doctoral research.

"It was during that time that I became interested in a specific group of bacteria that is associated with oral diseases such as periodontitis."

That group of bacteria, referred to as TM7, is also found in diverse environments such as soil, sludge, and volcanic ash.

"We discovered that most people have TM7 in their mouths, but some types of TM7 are there in larger abundance as the disease progresses

from healthy to gingivitis (gum inflammation) and then periodontitis (loss of tooth bone mass)."

Keep in mind, however, that less than fifty percent of bacteria are bad.

"Bacteria take the bad rap as causing damage to humans, but in fact, most bacteria work to protect the host against disease-causing bacteria and viruses by out-competing them for resources."

Both undergraduate and graduate students work in Dr. Ouverney's lab. His students have gone on to complete Ph.D. programs and to work in hospitals, in clinical labs, and at biotechnology companies such as Genentech, Illumina Inc., Life Technologies, Ion Torrent, and Maverix Biomics.

*Biological Sciences, College of Science
Sponsor: National Institutes of Health (NIH)*

Investigating Whooping Cough

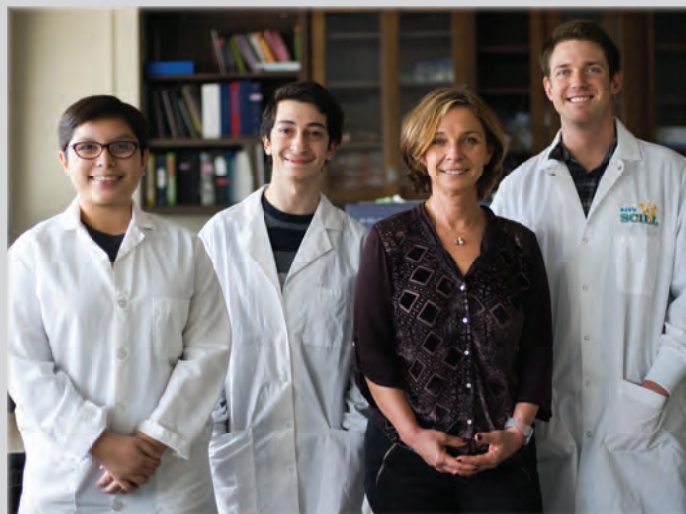
Tzvia Abramson and her students are engaged in the study of the highly contagious *Bordetella pertussis* bacterial infection, more commonly known as whooping cough. Their work focuses specifically on T helper 17 (Th17) cells, which have a central role in resolving the infection.

"Prior to the development of the vaccine in the 1940s, whooping cough was a common cause of death among children," Dr. Abramson explains. "Rates dropped dramatically after the vaccine's introduction."

Dr. Abramson's students are researching a mechanism that will recruit Th17 cells to the infection earlier, which may speed the body's immune response against the infection and could eventually contribute to an improvement in the vaccine. With her enthusiastic support, they are co-authoring journal articles on the subject and recently presented their findings at the CSU Annual Biotechnology Symposium.

"Engaging with students is the most gratifying part of my work," she says.

Dr. Abramson also leads the San José State University Consortium for Stem Cell Internships in Laboratory-based Learning (SCILL). The program leads to a master's degree plus a 12-month research internship at a host institution such as Stanford University, UC Santa Cruz, The Parkinson's Institute, Biotime, or Stem Cell Theranostics.



From left: undergraduate student Elvia Silva, undergraduate Tarek Jakoush, Tzvia Abramson, and graduate student and instructor Andrew Smith.

Biological Sciences, College of Science

Sponsors: NIH, National Institute of General Medical Sciences (NIGMS)

On the Front Lines of Community Wellness

Healthy & Active Aging

When The Health Trust sought evidence-based wellness programming for older adults in Silicon Valley, they turned to Tamar Semerjian at San José State University.

Her efforts led to the creation of the Silicon Valley Healthy Aging Partnership (SVHAP), a collaborative organization that shares aging-related educational resources and health promotion programs with community centers and agencies across Silicon Valley.



Dr. Semerjian's leadership at SVHAP has had a huge benefit for SJSU kinesiology students: opportunities to work in the field with aging adults.

"Our service-learning courses allow students to go out and conduct evidence-based physical activities in the field," explains Co-PI and SVHAP Project Coordinator Jennifer Schachner. "They are reading research articles

at the same time that they are managing community programs and teaching. They immediately connect that research to actual practice."

These service-learning experiences have led to significant career success for the participants.

"Many of those who have graduated are now working for agencies such as the City of San José or the YMCA," says Dr. Semerjian. "One of the most rewarding results of my work is seeing my students sitting across the table as collaborators when I go out into the community."

Department of Kinesiology, College of Applied Sciences & Arts; Sponsors: The Health Trust, El Camino Hospital, U.S. Department of Health & Human Services

Elder Wellness

With a grant from the Mid-Peninsula Housing Corporation, Sadhna Diwan brought together a multi-disciplinary team of 30 SJSU students and six faculty to provide wellness programs to the diverse residents of a senior housing complex in Mountain View. Blood pressure monitoring, home safety, Matter of Balance, nutrition, and recreation therapy were just a few of the programs presented.

"The idea is for students to develop both their research and clinical skills," Dr. Diwan explains. "Working with these seniors has been a career-building opportunity."



Dr. Diwan is the director SJSU's Center on Healthy Aging in Multicultural Populations (CHAMP). The grant was a mechanism for CHAMP to fulfill its mission of providing students with opportunities to engage in multidisciplinary practice with diverse populations.

One initial challenge in delivering the programs was the fact that five languages were spoken by the clients: English, Farsi, Korean, Mandarin and Russian. Fortunately, there were speakers of each of those languages among the students providing services, which led to cross-disciplinary interpretation cooperation.

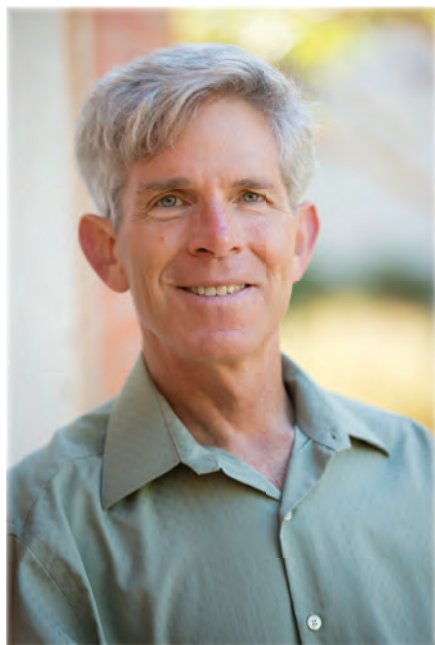
CHAMP's success in Mountain View led to a subsequent grant from the City of San José where students provided similar services to San José adults age 60 and older.

School of Social Work, College of Applied Sciences & Arts; Sponsors: Mid-Peninsula Housing, City of San José

Field Studies

At SJSU, research has never been confined to the classroom.

Across the OCEAN with Jonathan Geller



*Moss Landing Marine Laboratories
College of Science*

During the five years since the Tohoku tsunami in Japan, Jonathan Geller and his colleagues have been collecting samples of the resulting debris that traveled across the Pacific Ocean and came ashore in North America. As it turns out, plants and animals came along for the ride.

"Remarkably, we have discovered more than 300 species on Japanese debris landing in Oregon and Washington State," explains Dr. Geller. "Species-carrying debris, which include boats, docks, bottles, soccer balls, and even a motorcycle, have also been collected in California, British Columbia, and Alaska."

Geller is identifying these hitchhiking organisms and studying their genetics, growth, and population characteristics. Some are parasites that may be able to live on native species or commercially important species such as oysters and mussels.

The tsunami study is just one example of Dr. Geller's research on marine invertebrate invasions. Another project examines patterns of species diversity in the Coral Triangle region of the

Pacific Ocean, an area encompassing Indonesia, Malaysia, Papua New Guinea, the Philippines, and the Solomon Islands.

Students are key participants in Dr. Geller's research.

"Involving students in these projects is one of the most important way in which I teach lab skills and critical thinking. Students perform essential laboratory procedures, data analysis, and archiving. In some cases, students also perform fieldwork at local or distant sites such as Alaska, Panama, Bali, or French Polynesia."

Many students become coauthors on Dr. Geller's papers and presentations at scientific symposia. These connections, credentials, and skills all benefit students as they transition to scientific jobs or doctoral programs.

Sponsors: California Department of Fish and Wildlife, National Science Foundation, Ministry of the Environment of Japan through the North Pacific Marine Science Organization (PICES).

Collaborators: Williams College, the Smithsonian Institution, Oregon State University, UCLA, & SDSU

In the ANIMAL KINGDOM with Gitte McDonald

Gitte McDonald's love of marine animals was sparked by visit to Sea World in San Diego when she was seven years old. It led to her eventual research on the ability of marine mammals and birds to thrive in extreme environments.

Dr. McDonald examines the physiological mechanisms that determine the diving capacity, thermal tolerance, and reproductive and foraging strategies of air-breathing marine vertebrates, including seals, sea lions, birds and turtles.

"I might show a little favoritism to pinnipeds (seals and sea lions) and penguins because I think it is fascinating how they are adapted to both marine and terrestrial environments," she says.

Her research-related travels have led her to Antarctica, Denmark, the Galapagos Islands, and more local field sites in the U.S., including Florida, the Channel Islands, and, of course, Monterey Bay.

Based upon her own experience, Dr. McDonald is a strong believer in fieldwork for students.

"The hands-on experience that students obtain through their field research is essential training for future ecologists and physiologists," she explains. "The best way to truly understand a system is to get out in the field and study it – that is what gets students passionate about science."



*Gitte McDonald (left) with student Jacqueline Lindsey.
Moss Landing Marine Laboratories, College of Science*

Along the CALIFORNIA COAST with Joshua Mackie

With an eye to training future researchers, Joshua Mackie has been leading projects that fully engage undergraduate and graduate students in hands-on studies of marine invertebrates. The resulting experiences have led many students to continue their studies in science and to pursue careers in scientific disciplines.

Dr. Mackie's students have been examining the link between copper tolerance and the spread of invasive species in California. Copper is the active agent in antifouling paints currently used on all sizes of vessels. Marine species with a higher tolerance for copper are invading bays and harbors along the California coast, threatening the diversity and survival of native marine species.

"Students put in hundreds of hours collecting samples and analyzing organism data," said Dr. Mackie. "Twelve results-based presentations have been given at scientific conferences by students involved in this research."

The funding also made it possible for Dr. Mackie's students to travel to field sites (Catalina Island, Los Angeles, San Diego, and Humboldt), and attend an international conference in Toronto.

Several of Dr. Mackie's students have been hired for paid scientific positions; others have gone on to pursue masters or Ph.D. degrees.

"One of the reasons I was admitted into my graduate program was because I was able to demonstrate that I had lab and research experience at San José State," says SJSU graduate Danielle Perryman. She



is now conducting research into endocrine systems and ecology in a graduate program at Oklahoma State University.

Photo above, from left: Henry Dinh, Danielle Perryman (visiting the lab while home from Oklahoma State University during a holiday break), Stephanie Luu, Andrew Phan, Sri Krishna Vamsi Kadiyala, Kent Susick, and Joshua Mackie.

*Department of Biological Sciences, College of Science
Sponsors: National Science Foundation (NSF), CSU Council on Ocean Affairs, Science & Technology (COAST)*

On the FAULT LINE with Kim Blisniuk



As a tectonic geo-morphologist and quaternary geochronologist, Kimberly Blisniuk is engaged in examining and dating the Earth's landforms and alluvial deposits adjacent to the San Andreas Fault. In simpler English, that means she is gathering rocks, soil and sediment along California's most prominent earthquake fault, then measuring that material's age and movement over time.

"The goal is to go into the field and look at these land forms with trained eyes so we can document the progressive movement of the land along the fault," she explains. "By returning to those same locations and collecting samples on a regular basis, we can also obtain the age of the land forms."

Measurement of land progression and age is key to estimating earthquake recurrence.

"We are figuring out how fast a fault moves over the most recent geologic time period in earth's history. The rate at which a fault moves plus knowledge of the most recent earthquake's timing provides us with the recurrence interval of a fault."

Data from the measurements that Dr. Blisniuk and her students obtain in the field goes into scientific models of earthquake recurrence and seismic hazards. The data is also used by the federal government and insurance assessors to figure out where homes are the most vulnerable or least vulnerable to earthquake damage in order to determine earthquake insurance rates.

Dr. Blisniuk's own educational experiences with geology and field mapping led her to appreciate the value of field studies for students.

"Field work is essential to students. They need to learn the nitty-gritty of collecting and processing samples. One of my undergraduate students has taken samples he collected in the field to a geology lab at Stanford University where I have a working relationship with other researchers. He is getting firsthand experience with bringing what is collected in the field back to the lab for evaluation – exactly what he will be doing in a future career as a scientist."

*Department of Geology, College of Science
Sponsors: U.S. Geological Survey, Earthquake Hazards Program; Southern California Earthquake Center*

Transportation

In the air, on rails, or on the road, researchers are looking to the future.

NASA & SJSU Team for Collaborative Research Achievement



Cooperative agreements between SJSU research personnel and NASA scientists are exploring an array of technologies in the transportation sector, specifically those technologies that improve the efficiency and safety of air and space travel. Professor Emeritus of Psychology Kevin Jordan led these programs for more than two decades. In 2015, Associate Professor of Psychology Sean Laraway (above), transitioned to Project Director for the current cooperative agreement.

Throughout the history of these agreements, accomplishments have been prolific.

"In just the past year, in collaboration with our NASA partners, SJSU project team members published 62 articles, abstracts, chapters, conference proceedings, and technical reports," explains Dr. Laraway. "During that same time, our team won eight awards from NASA and professional organizations. We also submitted two patents; issued 15 software releases; and mentored 28 students, from high school to master's level."

The team's work contributes to the design of systems that improve human-computer interaction and the development of measures to support human performance in aircraft and spacecraft systems. Researchers develop flight-deck interactive systems, displays, and operations that improve crew performance. They also address the integration of unmanned aerial vehicles ("drones") into the national airspace to ensure safe operation.

The SJSU research teams include students from the Research and Experimental Psychology and Human Factors/Ergonomics master's programs. These students gain hands-on training and work closely with NASA scientists. After completing their studies at SJSU, many go on to Ph.D. programs. Others pursue full-time careers in industry or with government agencies, including NASA.

Department of Psychology, College of Social Sciences; Sponsor: NASA

Examining California's Concrete Bridges



Photo taken at the 2015 American Concrete Institute Convention in Kansas City, Missouri. From left: Dr. Akthem Al-Manaseer, Research Assistant Yvette Valadez-Carranza (who presented at the conference), Research Assistant Bassam Almanseer, Research Assistant Parisa Vaghari, and undergraduate Linda Romero.

The next time you cross a concrete bridge, think of SJSU professor Akthem Al-Manaseer and his students. Funded by a grant from Caltrans, they will spend a good part of 2016 studying several bridges in California to determine their "strength reserve capacity," that is, the amount of future load the bridge can support above its initial design load.

Dr. Al-Manaseer's research focuses on concrete – its composition, its strength, and its longevity. He has invented several devices for testing the properties of fresh and hardened concrete, one of which was created more than 25 years ago and is still in use today.

His newest invention consists of a laser sensor that measures vertical displacement of freshly mixed concrete placed into an insulated stainless steel mold. It determines the early age shrinkage that occurs in the concrete immediately after mixing. Less shrinkage at early age means less cracking will occur in the concrete, which leads to a more sustainable and crack-free structure.

In addition, Dr. Al-Manaseer is coauthor of *Structural Concrete, Theory and Design*, the foremost and best-selling textbook in the field. The sixth edition was published in 2015.

While Dr. Al-Manaseer's research, scholarship and inventions are legendary, he thrives most on working with students.

"That's my life – I enjoy students and their successes."

Department of Civil & Environmental Engineering, Charles W. Davidson College of Engineering; Sponsor: Caltrans



Emergency Preparedness in Transportation

While writing a campus emergency plan for SJSU, researchers Frances Edwards (above) and Daniel Goodrich realized that one of the biggest challenges during a major disaster would be transportation. What happens when an earthquake or flood occurs and the conduit for assistance, the transportation system, is damaged or unavailable?

"Because we are an inner city university surrounded by freeways, we saw the need for a tighter focus on emergency management in transportation," Dr. Edwards explains. "We sought to provide actionable training tools for those who are working in the field."

Dr. Edwards and Goodrich subsequently wrote two publications: *What Transportation Security and Emergency Preparedness Leaders Need to Know to Improve Emergency Preparedness*, and the accompanying *Handbook of Exercises for Transportation Sector Personnel*. The publications provide guidelines for transportation agency employees on executing emergency related tasks, for example, getting medical caregivers where they need to go if roads are damaged by an earthquake or chemical spill, or widening a narrow road in cases of fires or mudslides.

Not surprisingly, the handbook has been well received, not just by Caltrans, but also by transportation agencies in other "disaster-prone" states that contend with wildfires, floods, and earthquakes. The complete research report and handbook are available for free download at transweb.sjsu.edu/project/1103.



Spartan Superway

In a nondescript warehouse in downtown San José, an interdisciplinary group of fifty SJSU students is creating a next-generation system of truly sustainable urban transportation.

The project is a solar-powered automated transit network (ATN) where vehicles travel on a track elevated 20 to 30 feet above existing roadways. Aptly named the Spartan Superway, it is being developed by cohorts of students from mechanical, electrical, and computer engineering; industrial design; urban planning; and business, with guidance from Mechanical Engineering Professor Burford "Buff" Furman.

The ATN development project began in 2012. Early achievements included creation of a functioning 1/12th scale model, but the team more recently succeeded in constructing a full-scale section of operational guideway with a full-scale motorized vehicle cabin.

No market yet exists for the ATN, but Dr. Furman sees potential for future acceptance now that his students have demonstrated that the system is feasible.

"Our students have a vital and unique role to play in realizing the promise of solar-powered ATNs," he says. "The whole enterprise is simultaneously advancing the system's technology and educating the workers and entrepreneurs who will step into this new transit paradigm when it gains widespread acceptance."



Identifying Transit Demographics

While the U.S. Department of Transportation and Caltrans have set strategic goals for increasing public transportation, most Silicon Valley commuters still avail themselves of their cars. Marketing & Decision Sciences Professor Steven Silver is investigating the underlying reasons as to why commuters make the transit choices they do, and what offerings might increase public transportation usage.

By developing models that examine transportation-related priorities as they relate to commuter demographics along local high-tech corridors, Dr. Silver is able to offer inference on policy in the design of transportation services. Is cost the most critical criteria for choosing whether to drive or take public transportation? Is convenience more important? Or is length of travel time a deal breaker?

"Here in Silicon Valley, people have a real alternative to public transportation – their cars and the relatively easy access to freeways," Dr. Silver explains. "This makes it very competitive for public transportation agencies to increase ridership. We are seeking information on what sorts of transit designs and services will entice commuters to take public transit."

SJSURF Partnership with the Mineta Transportation Institute

The Mineta Transportation Institute (MTI) is one of the Research Foundation's most prominent programs, and sponsors each of the projects profiled on this page. MTI conducts research, education programs, and information and technology transfer, focusing on multimodal surface transportation policy and management issues. MTI is funded by the U.S. Department of Transportation's (DOT)

Office of the Assistant Secretary for Research and Technology (OST-R), the California Department of Transportation (Caltrans), and by other public and private grants and donations, including grants from the U.S. Department of Homeland Security. The Lucas College & Graduate School of Business University is MTI's academic home. transweb.sjsu.edu

Student Success

*The grants awarded to SJSU are not always for traditional “research.”
Some grants with the greatest impact provide direct support to students.*

Grant Awards Increase Student Success

Maureen Scharberg has amassed a robust array of grant awards in support of student success. These awards are funding programs for first-generation and under-represented minority students, research-based summer bridge programs for incoming freshmen, and improved student advising services.



“One of my favorites was our National Science Foundation (NSF) grant. It helped us jump start student success in the College of Science by establishing the College of Science Advising Center,” says Dr. Scharberg. “It also made it possible for faculty to do research on best practices for the classroom in math, computer science, and physics.”

Grants from the U.S. Department of Education are funding SJSU's writing support services. Proactive models of active engagement in writing are fostering a campus-wide culture of writing excellence. Professional development for faculty in teaching writing strategies is also part of this program.

Project Succeed, also funded by the U.S. Department of Education, is strengthening SJSU's climate with respect to increasing retention and graduation rates. Research-based systems for transitioning freshmen to SJSU are being implemented, such as block scheduling, learning communities and peer mentoring.

“Student success is about learning and academics, but it is also about feeling connected to the campus,” explains Dr. Scharberg. “Targeted advising and a supportive environment are key to helping our students succeed.”

Student Academic Success Services, Office of the Provost

Sponsors: U.S. Department of Education, National Science Foundation, Office of Naval Research

Scholarships for Prospective Entrepreneurs

Thanks to the \$600,000 four-year Silicon Valley Innovation and Entrepreneurship Scholarships Program (SVIES), graduate engineering students at SJSU have new opportunities to learn about innovation, with direct support from Silicon Valley entrepreneurs.



Founded by Ahmed Hambaba (left) and Jacob Tsao (right) the program provides \$10,000 annual scholarships to academically talented, financially needy graduate engineering students at SJSU. These scholarships come with significant educational and research components that teach about thinking creatively, visualizing new products, and starting new companies.

Drs. Tsao and Hambaba have already solicited participation and mentoring support from founders of both well-known and start-up Silicon Valley businesses.

“Hearing innovators' stories first-hand sparks the imagination,” explains Dr. Hambaba. “Students learn what exactly happens in the mind of the innovator: what drives their creativity, what the context was for the innovator's idea, and how they developed that idea into a product.”

Both professors hope for a broad expansion of the SVIES program over time.

“Eventually we would like to see an Innovation & Entrepreneurship certificate program in the College of Engineering,” said Dr. Tsao. “We hope to institutionalize innovation education at SJSU.”

Charles W. Davidson College of Engineering

Sponsor: National Science Foundation (NSF)

SJSU Students Excel at CSU-wide Research Competition

Ten students who were finalists in the annual SJSU Student Research Competition represented SJSU at the 29th annual CSU Research Competition, held at CSU San Bernardino on May 1 & 2, 2015 (see names below). The annual competition promotes excellence in undergraduate and graduate scholarly research and creative activities, and honors outstanding accomplishments by students throughout the 23-campus system.

Andrew Donahue

Linguistics, College of Humanities and the Arts
"Language Variation in Online Communities"
Faculty Mentors: Roula Svorou and Daniel Silverman

Zeynep Erturkoglu

Business Administration, Lucas College and Graduate School of Business
Pressing the Play Button: Understanding the Factors that Influence Social and Mobile Gaming
Faculty Mentor: Jing Zhang

Dennis Kwon and Spencer Matteson

Electrical Engineering, Charles W. Davidson College of Engineering
Stand-Alone Control of DFIGs in a Multiple Wind Turbine System with Load Sharing
Faculty Mentor: Ping Hsu

Shiva Moballegh

Electrical Engineering, Charles W. Davidson College of Engineering
Efficient Message Propagation in Dense Smart-Vehicular Networks
Faculty Mentor: Birsan Sirkeci

Four SJSU students received awards at the event (see photos below). In the Biological and Agricultural Sciences Graduate Student category, **Katherine Watters** took first place. In the Engineering and Computer Sciences Graduate Student Category, **Shiva Moballegh** took first place and **Sanrupti Nerli** took second place. In the category of Humanities and Letters, Creative Art & Design, **Mary Okin** took second place. Congratulations to all!

Sanrupti Nerli

Computer Science, College of Science
Genome-wide Prediction of Splice Sites Using Classification Trees
Faculty Mentor: Sami Khuri

Mary Okin

Art History and Visual Culture, College of Humanities and the Arts
The "Maiden at the Press": Arthur F. Matthews and the Rise of the New Woman
Faculty Mentor: Beverly Grindstaff

Syeda Roohi and Vaishak Suresh

Software Engineering, Charles W. Davidson College of Engineering
Aspect-Based Opinion Mining and Recommendation System for Reviews
Faculty Mentor: Magdalini Eirinaki

Katherine Watters

Biological Sciences, Physiology Concentration, College of Science
A Novel Mechanism that Directs Neural Circuit Formation
Faculty Mentor: Miri VanHoven



Katherine Watters (left) with Dean of Graduate Studies and Associate Provost for Research Jeffrey Thompson, California State University, San Bernardino. Photo by Corinne McCurdy/CSUSB



From left, Shiva Moballegh, San José State University; Jeffrey Thompson, Dean of Graduate Studies and Associate Provost for Research, California State University, San Bernardino; and Sanrupti Nerli, San José State University. Photo by Corinne McCurdy/CSUSB



Mary Okin (right) with Dean of Graduate Studies and Associate Provost for Research Jeffrey Thompson, California State University, San Bernardino. Photo by Corinne McCurdy/CSUSB

SJSU Research Foundation Early Career Investigator Awards

The SJSU Research Foundation Early Career Investigator Award recognizes tenure-track faculty who have excelled in areas of research, scholarship or creative activity as evidenced by their success in securing funds for research, publishing in peer-reviewed journals, and carrying out other important scholarly and creative activities at an early or beginning point in their careers at SJSU.

Aaron Romanowsky from the Department of Physics and Astronomy, College of Science and Virginia San Fratello from the Department of Design, College of Humanities and the Arts were the 2015 awardees. Their selection was made by the Early Career Investigator Subcommittee consisting of Research Foundation board members and faculty.

With a long track record of funding, Aaron Romanowsky has been extremely productive in his field of astrophysics, specializing in dark matter and galaxy formation. In fewer than three years at SJSU, he has produced 47 refereed publications in journals such as *The Astrophysical Journal*. Recent funding includes \$40,718 from the National Science Foundation.

With a history of grant awards from a variety of sources, Virginia San Fratello has achieved an outstanding record of research and scholarship in her field of design, specializing in materials and fabrication processes, including 3-D printing. Recent funding includes \$90,000 from the U.S. Environmental Protection Agency.



Contract & Grant Awards 2014-15

College of Applied Sciences and Arts

Dean's Office

Alice Hines

Social Work Education Enhancement Program (SWEEP)
USAID
\$764,189.00

Virgil Gregory Payne

Stanford Geriatric Education Center
Stanford University
\$19,000.00

Health Science and Recreation

Debra David

Give Students a Compass, Phase II
Trustees of the CSU
\$21,341.00

Regional Network for Engaged Learning
Trustees of the California State University
\$23,471.00

Hospitality Management

Yinghua Huang and Tsu-Hong Yen

A Market Feasibility Study of Hotel Investment in Silicon Valley, California
Dalian Dianye Real Estate Development
\$50,000.00

Justice Studies

Margaret E. Stevenson

Criminal Record Expungement Services
Santa Clara County
\$33,500.00

Criminal Record Expungement Services
Castellano Family Foundation
\$5,000.00

Kinesiology

Tamar Semerjian and Jennifer Schachner

SVHAP: The Silicon Valley Healthy Aging Partnership
The Health Trust
\$17,500.00

Nutrition and Food Science

Lucy McProud

Cal-Pro-Net Center 2014-2015
California Department of Education
\$209,424.34

School of Information

Lili Luo and Michael Stephens

Institute for Research Design in Librarianship (IRDL)
Loyola Marymount University
\$24,488.00

School of Social Work

Edward Cohen

Evaluation of Santa Clara County's Dual Diagnosis Juvenile Treatment Court
Superior Court of California,
County of Santa Clara
\$52,905.00

Sadhna Diwan

Social Services Staff Training for Mid-Peninsula Resident Services Corp
MidPen Housing
\$8,900.00

Sadhna Diwan and Sang Lee

Multidisciplinary Healthy Aging and Wellness Programs
City of San José
\$25,746.00

Laurie Drabble

Sexual Orientation Differences: Prevalence & Correlates of Substance Use & Abuse
Public Health Institute
\$32,953.00

Laurie Drabble and Kathy Lemon-Osterling

Child Welfare Partnership for Research and Training
University of California, Berkeley
\$75,000.00

Jack C. Wall

Title IV-E Child Welfare Training 2014-2015
University of California, Berkeley
\$1,554,123.00

California Department of Mental Health
Educational Stipend Program- 2014-2015
University of California, Berkeley
\$161,600.00

Jack C. Wall, Laurie Drabble, and Peter Lee

Writing Skills for Child Welfare Workers
Online Course Pilot Phase
University of California, Berkeley
\$5,000.00

Lucas College & Graduate School of Business

Dean's Office

Frances Edwards

ICS Training for Field Level Transportation Supervisors and Staff
The National Academy of Sciences
\$100,000.00

David M. Steele and Rod Diridon

Mineta Transportation Institute SAFETELU
CA State, Department of Transportation
\$2,000,000.00

Update of the MTI Database on Terrorist and Serious Criminal Attacks against Public Surface Transportation
University of Connecticut
\$97,020.00

Connie L. Lurie College of Education

Dean's Office

Elaine Chin

California Teachers Convening
CSU Fullerton Auxiliary Services Corporation
\$48,169.00

Communicative Disorders and Sciences

June McCullough and Gloria Weddington

Combined Priority for Personnel Development
U.S. Department of Education
\$250,000.00

Wendy Quach

Optimal AAC Technology for Individuals with Severe Communication Disabilities
University of Wisconsin-Milwaukee
\$50,100.00

Wendy Quach and Pei-Tzu Tsai

Project Tapestry: Preparing Culturally Competent Speech-Language Pathologists to Deliver High Quality Services to Child
U.S. Department of Education
\$250,000.00

Wendy Quach and Gloria Weddington

Combined Priority for Personnel Development
U.S. Department of Education
\$250,000.00

Contract & Grant Awards 2014-15 *continued*

Elementary Education

Roxana Marachi

SESAP - School Engagement and
Suspension Alternatives/SCCPDFO
Santa Clara County
\$11,923.00

Nancy L. Markowitz

Social-Emotional Learning &
Common Core State Standards
Sunnyvale School District
\$9,270.00

David Whitenack

English Language and Literacy Integration in
Subject Areas (ELLISA)
University of California, Santa Cruz
\$95,760.00

Secondary Education

Brent Duckor

ODE Teacher Professional Development Project
Oregon Department of Education
\$58,707.00

Katya Karathanos

San José State University Single Subject
Intern Program 2014-2015
Milpitas Unified School District
\$80,543.00

Katya Karathanos and Mark Felton

San José State University Single Subject
Intern Program 2013-2014
Milpitas Unified School District
\$13,628.35

Charles W. Davidson College of Engineering

Dean's Office

Thalia Anagnos

Purdue University Nees Operations:
FY2010-FY2014
Purdue University
\$12,500.00

Ahmed Hambaba and Craig Hobbs

Intel Rapid Prototyping Challenge
Intel Corporation
\$25,000.00

Jinny Rhee and Blanca Sanchez-Cruz

2014-2015 MESA Engineering Program (MEP)
Regents of the University of California
\$10,000.00

Aerospace Engineering

Periklis Papadopoulos and Kamran Turkoglu

NASA - SPHERES Program
(Unsolicited Proposal)
\$106,000.00

Biomedical, Chemical, and Materials Engineering

Folarin Erogbogbo

I-Corps Site: A Biological Sciences Site
for the CSU
San Diego State University Research Foundation
\$12,500.00

Civil and Environmental Engineering

Akthem Al-Manaseer

Controlling Temperature and Shrinkage Cracks in
Bridge Decks and Slabs
Regents of the University of California
\$120,100.00

Computer Engineering

Jerry Gao

Research about SaaS Application Testing
on Cloud
Fujitsu America, Inc.
\$14,300.00

Sigurd Meldal and Eirinaki Magdalini

Team for Research in Ubiquitous Secure
Technology (TRUST):
An NSF Science and Technology Center
University of California, Berkeley
\$105,000.00

Haluk Ozemek

Technical Services for IBM
International Business Machines
\$352,176.00

Electrical Engineering

Chang Choo and Simon Shim

2014 Silicon Valley Summer Training Workshop
for Korean Software Developer
National IT Industry Promotion Agency
\$148,900.00

Essam Marouf

Investigation of Saturn's Rings By Cassini Radio
Occulation: Cassini Equinox Mission to Saturn
Jet Propulsion Laboratory
\$232,276.00

Industrial and Systems Engineering

Yasser Dessouky and Ayca Erdogan

VA-CASE Professional Development CPAC
LEAN/Lean Six Sigma (LSS)
Veterans Administration
\$28,210.41

Jacob Tsao and Ahmed Hambaba

Silicon Valley Innovation & Entrepreneurship
Scholarships (SVIES) Program
National Science Foundation
\$599,642.00

College of Humanities and the Arts

Art & Design

Anne Simonson

The Bay Area California Arts Project
Regents of the University of California
\$31,926.00

The California Arts Project-CSMP
Regents of the University of California
\$23,074.00

English and Comparative Literature

Andrew Altschul and Nicole Hughes

Center for Literary Arts' 2014-2015 Season
Silicon Valley Creates
\$3,400.00

Center for Literary Arts Program Funding
2014-2015
City of San José
\$12,500.00

Jonathan H. Lovell

San José Area Writing Project 2014-2015 NCLB11
Regents of the University of California
\$36,500.00

San José Area Writing Project 2014-2015
CSMP
Regents of the University of California
\$24,000.00

TV, Radio, Films and Theatre

Amy Glazer Connolly

Guest Artist Series
The Kanbar Charitable Trust
\$5,000.00

College of Science

Dean's Office

Elaine D. Collins

SJSU MESA Schools Program - Bridges Academy
(of Franklin-McKinley School District)
Franklin-McKinley School District
\$4,000.00

SJSU MESA Schools Program ARUESD Agreement
Alum Rock Unified Elementary School District
\$21,000.00

SJSU MESA Schools Program-
Downtown College Prep
Downtown College Prep
\$8,000.00

SJSU MESA Schools Program
ESUHSD Agreement
East Side Union High School District
\$24,000.00

MESA Program Plan 2014-2015
Regents of the University of California
\$200,000.00

SJSU MESA Schools Program MHUSD Agreement
2013-15
(Morgan Hill Unified School District)
Morgan Hill Unified School District
\$8,000.00

STEM Magnet: Improving Pathways for
Hispanic/Low-Income Students
Gavilan Joint Community College District
\$196,993.00

SJSU MESA School Programs SJUSD Agreement
(Partner School Site: Lincoln High School)
San José Unified School District
\$4,000.00

Western Digital Foundation Project
Western Digital Foundation
\$5,000.00

Mentor Graphics Foundation Grant
Mentor Graphics Foundation
\$5,000.00

Virginia Lehmkuhl-Dakhwe
Girls/Youth STEM Network (Cyber)
Intel Foundation
\$25,000.00

Youth STEM Network
Texas Instruments
\$25,000.00

Biological Sciences

Tzvia Abramson

Stem Cell Internships for Laboratory-Based
Learning (SJSU SCILL)
California Institute of Regenerative Medicine
\$624,714.00

Immunodulation By Bordetella Pertussis of
Lymphocytes Trafficking to the Lungs
Department of Health and Human Services
\$107,550.00

Shannon M. Bros and Joshua Mackie

Assessing the Role of Copper Tolerance in
Biofouling Invasion Risk around California
California State Lands Commission
\$24,289.00

Rachael French

Genetic & Molecular Mechanisms of
Ethanol-Induced Developmental Defects
Department of Health and Human Services
\$107,550.00

Leslee A. Parr

MARC U*STAR at SJSU
Department of Health and Human Services
\$273,723.00

Nishanta Rajakaruna

Collaborative Proposal: Harnessing the
Power of Herbaria to Understand the
Changing Flora of California
University of California, Berkeley
\$9,565.00

Miri Van Hoven

IOS: RUI: Investigation of the Role of a
Receptor Protein Tyrosine Phosphatase in
Synaptic Partner Recognition
National Science Foundation
\$280,000.00

Molecular Mechanisms of Neural Circuit Formation
Department of Health and Human Services
\$107,550.00

The Effects of Normal and Prolonged Sensory
Activity on Neural Circuits, Biological Sciences
University of California, San Francisco
\$156,844.00

Brandon White

Stanford - SJSU Postdoctoral Training Program to
Enhance URM Teaching
Stanford University
\$177,254.00

Chemistry

Lionel Cheruzel

RU(II) Diimine Labeled P450 Mutants for Selective
Hydroxylation of Substrate C-H Bond Using
Innovative Photo-Oxidative
Department of Health and Human Services
\$108,375.00

Daryl K. Eggers

Role of Desolvation Energy in
Model Biological Reactions
Department of Health and Human Services
\$289,000.00

Daryl K. Eggers, Alberto Rascon, and Elizabeth Skovran

MRI: Acquisition of a
Microscale Thermophoresis Instrument
National Science Foundation
\$150,511.00

Gilles Muller

Chiroptical Induced CPL-Based Tool as a
Probe of Biological Substrates
Department of Health and Human Services
\$215,100.00

Karen A. Singmaster

CSU SJSU LSAMP Program
CSU, Sacramento
\$40,000.00

SJSU LSAMP Program
CSU, Sacramento
\$30,000.00

Karen A. Singmaster and Herbert B. Silber

San José State University
Undergraduate MBRS Rise Program
Department of Health and Human Services
\$447,837.00

Bradley M. Stone

Chemistry Coalitions, Workshops and
Communities of Scholars
Georgia State University
\$25,064.00

Annalise Van Wyngarden

Organic Layers on Surfaces
NASA
\$12,500.00

Computer Science

Ronald Mak

Student Travel Support for the CGO 2015 and
PPoPP 2015 Symposia Co-located in
San Francisco, CA
National Science Foundation
\$30,000.00

Contract & Grant Awards 2014-15 *continued*

Geology

Kimberly Blisniuk

Determining Long-Term Slip Rate Estimates for the Santa Cruz Mountains Section of the Northern San Andreas Fault
Department of Interior
\$49,458.00

Evaluating Active, Rapid Late Quaternary Fault Slip on the Mission Creek Fault near San Geronio Pass
University of Southern California
\$28,000.00

Robert B. Miller

Collaborative Research: Incorporation of Metasedimentary Rocks into the Deep Levels of Continental Arcs
National Science Foundation
\$79,956.00

EDMAP: Structure and Construction of Cretaceous Plutons, North-Central Sierra Nevada, California
Department of Interior
\$25,173.00

Mathematics

Roger Alperin

EFRI-ODISSEI: Origami and Assembly Techniques for Human-Tissue-Engineering (OATH)
Northeastern University
\$72,994.00

Joanne Rossi Becker

Silicon Valley Mathematics Initiative 2015-16
Proposal Mathematics
Silicon Valley Community Foundation
\$100,000.00

Joanne Rossi Becker and Cheryl Roddick

Santa Clara Valley Mathematics Project (5A- NCLB11)
Regents of the University of California
\$27,000.00

Santa Clara Valley Mathematics Project - CSMP
Mathematics
Regents of the University of California
\$20,000.00

Guangliang Chen

2015 Simons Travel Grant Application
Simons Foundation
\$35,000.00

Roger Dodd and Chang Choo

SJSU CAMCOS 2015
Volkswagon Group of America, Inc.
\$45,010.00

Meteorology & Climate Science

Sen Chiao

Unidata 2018: Transforming Geosciences through Innovative Data Services
University Corporation of Atmospheric Research
\$11,510.00

Craig B. Clements

Monitoring Fire Weather and Fuels Conditions in a Changing Climate
Mid-Peninsula Regional Open Space District
\$24,079.00

CAREER: Towards a Better Understanding of Wildfire-Atmosphere Interactions- Integrating Fire Weather Research & Education
National Science Foundation
\$202,002.00

Analyses of Fire-Induced Atmospheric Turbulence Regimes from Field Observations
U.S. Forest Service
\$34,000.00

Weather Support for Unmanned Vehicle Systems
Traffic Flow Management
NASA
\$101,587.00

Doppler Lidar Operation and Wind Analysis
University of California, Davis
\$14,000.00

College of Science: Moss Landing Marine Laboratories

Ross Clark

Evaluate Nutrient Reduction Capacity of Five Treatment Systems in a Controlled Environment
California Department of Food and Agriculture
\$344,437.00

Development of Bar Built Estuary Monitoring System & Resource Management Prioritization Tool for CA State Parks and Coastal Communities
San José State University
\$322,800.00

Tetra Tech Contract-CRAM
Implementation Support (PO # 1109036)
Tetra Tech, Inc.
\$19,953.00

Kenneth Coale and Wesley Heim

Collaborative Research: Investigations on Cycling of Mercury from the Ocean to Fog and Deposition to Land in Coastal CA
National Science Foundation
\$5,000.00

Russell Fairey

Monitoring Framework Development Support- Quality Assurance/Quality Control
University of California, Davis
\$14,449.00

CEDEN-2015-SWRCB
Agreement 14-076-270
CA State, Water Resources Control Board
\$123,000.00

Jonathan Geller

CDFW-Agreement P1475002
Molecular Analyses for OSPR
(Office of Spill Prevention and Response)
CA State, Department of Fish & Wildlife
\$829,572.00

Pire: Understanding Marine Biodiversity along Geographic and Anthropogenic Stress Gradients
San Diego State University
Research Foundation
\$124,706.00

Japanese Tsunami Marine Debris (JTMD) and Alien Species Invasions: PICES Year 1
Williams College
\$65,115.00

H. Gary Greene

DCPP Intake Cove Sediment Study
Pacific Gas & Electric Company
\$36,698.00

Enhancement of Healthy Coastal Environments by
Incorporating Species Interactions into Seagrass
Mitigation and Restoration
University of California, San Diego
\$9,999.00

Scott Hamilton

RUI: Ocean Acidification: Multiple Stressor Effects
of Ocean Acidification and Hypoxia on Behavior,
Psychology and Gene Expression
National Science Foundation
\$330,341.00

Collaborative Research: RUI: Impact of Size-
selective Mortality on Sex-changing Fishes
National Science Foundation
\$207,252.00

James Harvey

2014 PSSS Alternative Flame Retardants-Seal
San Francisco Estuary Institute
\$12,038.00

Ship-whale Interactions and the Effect of Ships
on the Dive Behavior of Baleen Whales in Major
Shipping Lanes Off San Francisco, CA
Cascadia Research Collective
\$19,989.00

Ludhorff and Scalmanini -
Elk Grove Dry Well Project (OEHA)
Ludhorff and Scalmanini
\$31,730.83

Samples for UC Davis - Simone Hasenbein
University of California, Davis
\$2,819.98

CDFW Silver King and Lake Davis
CA State, Department of Fish & Wildlife
\$5,509.98

Analysis Plasma and Tissue for PCBs, PBDEs and
Organochlorine Pesticides
University of California, Santa Cruz
\$15,000.00

Analysis of Water Samples from Sacramento - San
Joaquin Delta Area by USFWS to Study the Effects
of Waterborne Contaminants on Delta Smelt
U.S. Fish and Wildlife Service
\$15,104.88

Karuk Tribe Microcystin Study
Karuk Tribe
\$2,623.32

Water Sample Analysis for
UC Davis Veterinary Medicine
University of California, Davis
\$1,001.63

Estuarine Wetland and Near Shore Ecology Studies
along the Pacific Flyway
U.S. Geological Survey
\$123,000.00

CeNCOOS: Long-Term Monitoring of
Environmental Conditions in Support of Marine
Area Mgmt in Central & Northern California
Monterey Bay Aquarium Research Institute
\$64,000.00

Karuk Tribe
Microcystins CDFG
Karuk Tribe
\$2,812.32

SFEI Contract 1102 Fipronil + Deg in Effluent and
Influent Water Analyses
San Francisco Estuary Institute
\$10,647.00

Microcystins Subcontracted for SWRB R9
San Francisco Bay Region Waterboard
Excelchem Environmental Labs
\$5,000.00

Water Sample Analysis UC Davis Ibuprofen
University of California, Davis
\$1,285.20

CBEC Eco Engineering -
Elk Grove Dry Well Project (OEHA)
CBEC Inc., Eco Engineering
\$6,538.14

Laboratory Analysis of Condor Eggs for
Organochlorine Pesticides and PCBs
Ventana Wildlife Society
\$16,000.00

Enhanced Stranding Response and a New
Partnership between Long Marine Lab and Moss
Landing Marine Lab Stranding Networks
University of California, Santa Cruz
\$27,334.75

Yurok Tribe - Klamath Water Quality Project
Yurok Tribe
\$3,213.00

Rotenone and Rotenolone Analysis for Alaska
Department of Fish & Game
Alaska Department of Fish & Game
\$4,158.00

R/V Point Sur Sale Proceeds
National Science Foundation
\$1,379,219.00

Samples for Chevron El Segundo-WPCL
Chevron-USA
\$16,637.04

Naval Postgraduate School
Quote N62271-15-Q-1147_A0001
Naval Postgraduate School
\$27,755.00

East Bay Regional Park District - Lake Chabot
East Bay Regional Park District
\$1,320.00

East Bay Regional Park District - Lake Temescal
East Bay Regional Park District
\$1,320.00

SJSU-WPCL (Moore Twinning, Inc. (Contracted for
Central Coast Water Quality Control Board - R3
Mary Hamilton)
Moore Twining Associates
\$4,233.60

James Harvey and Weisley Heim

2014 RMP S&T Sportfish - 1086
San Francisco Estuary Institute
\$91,109.00

Contract with Brown and Caldwell Corp.,
for Ongoing Analytical Services
Brown and Caldwell
\$309,003.65

James Harvey and Jonathan M. Prince

Office of Naval Research (ONR)
Service Requirement AGOR Support
Office of Naval Research
\$315,124.00

James Harvey and Murray Stein

UCSC Kudela-Negrey NASA & First Flush Cruises
University of California, Santa Cruz
\$6,944.31

Ship Operations - RV Point Sur
National Science Foundation
\$54,796.00

Ship Time for Ocean Observation Systems
Humboldt State University
\$251,352.00

Real-time Underseas Networking for Improved
UUV Positioning and Collaboration
Naval Postgraduate School
\$6,944.31

2014 ONR Ship Operations
Office of Naval Research
\$101,742.00

Contract & Grant Awards 2014-15 *continued*

UCSC Kudela-Negrey NASA & First Flush Cruises
University of California, Santa Cruz
\$787.33

NSF-OCE Pt Sur-Ship Operations Annual Report
CY 2015
National Science Foundation
\$449,423.00

Wesley Heim

Seal Beach Mussels N62473-12-R-Mussel
Department of the Navy
\$16,308.00

LA River and San Gabriel Watershed
Fish Collections
Aquatic Bioassay Lab
\$13,860.00

Mokelumne River Cu Project 2015- S25
ERM
S25 Environmental Research Management
\$9,819.06

Wesley Heim and Autumn Bonnema

State Water Resources Control Board
Agreement Number: 13-084-180
CA State, Water Resources Control Board
\$100,000.00

MBARI Sediment Analysis July 2014
Monterey Bay Aquarium Research Institute
\$6,768.00

Excelchem Mercury Analyses for SWRCB
Excelchem Environmental Labs
\$10,662.00

Fremont Landing Conservation Bank
Methylmercury Monitoring Proposal -
Wildlands Inc.
Wildlands, Inc.
\$27,902.00

Fish Tissue Mercury Analysis -CRWQCB-6
CA State, Water Resources Control Board
\$25,000.00

LA River and San Gabriel Watershed Fish
Collections - Aquatic Bioassay
Aquatic Bioassay Lab
\$88,100.00

Stacy Kim

Marine Invasive Species Archived Sample
Maintenance-CDFW
CA State, Department of Fish & Wildlife
\$8,059.59

Jason G. Smith

A Regional Comparison of Upwelling and Coastal
Land Use Patterns on the Development of HAB
Hotspots along the California Coast –
MLML Component
Department of Commerce
\$93,021.00

Richard Starr

Supporting a Spatial Analysis of the Distribution
and Sizes of Rebuilding Stocks in the Rockfish
Conservation Areas
Department of Commerce
\$314,147.00

Collaboration with Marine Applied Research and
Exploration
University of California, San Diego
\$37,528.00

Fishery Ecological Data Research
University of California, San Diego
\$2,611.00

Diana Steller

MISO Dive
Naval Postgraduate School
\$14,039.00

Nick Welschmeyer

Golden Bear Facility-Science Team Support
(Trojan UV)
California Maritime Academy
\$34,035.62

Golden Bear Facility - Amendment I
California Maritime Academy
\$49,386.00

CMA-Project Juliet: EcoChlor, Inc.
California Maritime Academy
\$349,381.00

Mark Yarbrough

MOBY
University of Miami
\$376,934.00

Developing a MOBY-NET Instrument, Suitable for
a Federation Network for Vicarious Calibration of
Ocean Color Satellites
University of Miami
\$485,770.00

Nuclear Science

Herbert B. Silber

Undergraduate Summer School in Nuclear and
Radiochemistry
University of Missouri
\$54,101.00

Physics & Astronomy

Friedemann Freund

Stress-Activated Positive Hole Currents & Their
Role in Earth Interior & Surface Processes
NASA
\$181,300.00

Alejandro L. Garcia

Stochastic & Hybrid Models and Algorithms for
Fluids Project
Lawrence Berkeley National Laboratories
\$96,968.00

Patrick Hamill

Interpreting the Cratering Record of the
Saturnian Satellites
Southwest Research Institute
\$36,692.00

Michael Kaufman

Systems Teaching Institute (Summer Student Tasks)
Regents of the University of California
\$224,133.00

Carbon in the Interstellar Medium
University of Maryland
\$75,253.00

Why Are Outflows Under-Producing Water?
Smithsonian Institution
\$18,918.00

Developing the Astronomical Infrared Bands into
Calibrated Probes of Astrophysical Conditions
Using the NASA Ames PAH IR
NASA
\$149,211.00

System Teaching Institute (STI) Students Task
56-S
Regents of the University of California
\$7,980.00

Michael Kaufman and Olenka Hubickij
System Teaching Institute (STI) Student Task 110-S
Physics
Regents of the University of California
\$17,925.00

Monika Kress
The Virtual Planetary Laboratory
University of Washington
\$10,000.00

Ignacio Mosqueira
The Thermal Evolution of Icy Primordial
Planetesimals
NASA
\$90,662.00

Aaron Romanowsky
Collaborative Research: Rethinking the
Fundamentals of Massive Star Clusters
National Science Foundation
\$13,054.00

College of Social Sciences

Economics

Colleen Haight
Institute for Humane Studies-
Faculty Partnership Agreement
Institute for Humane Studies
\$1,000.00

Lydia Ortega
Koch Foundation Research Group Grant
Charles Koch Foundation
\$29,000.00

**Robi Ragan, Colleen Haight, and
Matthew J. Holian**
Friday Afternoon Workshop and
Student Research Competitions
Charles Koch Foundation
\$25,000.00

Environmental Studies

Alexander Gershenson
Collaborative Research and Extension Network for
Sustainable Organic Production Systems in
Coastal California
University of California, Santa Cruz
\$21,162.00

Geography

Kathryn Davis
Cooperative Agreement with USGS Western
Geographic Science Center
U.S. Geological Survey
\$191,073.00

Political Science

Garrick Percival
IPACE Internship Program Political Science
Senate Committee on Rules
\$4,652.00

Psychology

Vernol Battiste
Single Pilot Understand through Distributed
Simulation (SPUDS)
CSU, Long Beach Research Foundation
\$30,000.00

Dorrit Billman
Automation in Procedures: Guidelines for
Tasks for Performance
National Space Biomedical Research Institute
\$120,305.00

Kevin Jordan
IPA - Paul Lee
NASA
\$437,792.00

Autonomous Flight, Future Vertical Lift Systems,
and Human Systems Integration
NASA
\$2,344,756.27

IPA Assignment - Steven Hillenius
NASA
\$31,044.00

IPA Assignment- Brian Gore
NASA
\$10,339.00

Sean Laraway
A Proposal to Conduct Collaborative Human
Systems Integration Research Between NASA
Ames Research Center And SJSU
NASA
\$14,752,679.05

Audra Ruthruff
Test Subject Recruitment Office
ASRC Federal
\$789,340.21

Jeremiah Still
Optimizing the User Experience of Device
Customization
Motorola Corporation
\$9,635.00

Contract & Grant Awards 2014-15 *continued*

Sociology & Interdisciplinary Social Sciences

Scott Myers-Lipton

Social Impact Internship Program
Santa Clara County
\$31,370.00

Urban and Regional Planning

Dayana Salazar

CommUniverCity: Joven Noble
City of San José
\$62,000.00

CommUniverCity: Accelerating Third Grade
Literacy in FWBT
City of San José
\$96,212.00

CommUniverCity: Community Services Program,
Urban & Regional Planning
City of San José
\$100,000.00

Dayana Salazar and Richard Kos

East Santa Clara Street Urban Village Planning
City of San José
\$132,820.00

University Programs

San José State University Research Foundation

Jeanne Dittman

CPEHP Continued Funding
Regents of the University of California
\$73,483.20

Executive Training & Mentoring
National IT Industry Promotion Agency
\$119,950.00

Research Administrative Resources for the
Space Research Directorate
Lockheed Martin Corporation
\$33,395.00

Research Administrative Resources for the
Space Research Directorate
Wyle Laboratories
\$168,907.84

Czech Invest Cycle 6
Czech Invest
\$27,450.00

Accelerated Growth Engagement Cycle 5
Enterprise Ireland
\$171,757.00

Office of Research

James L. Wayman

Consultancy Support to the CESG Biometrics Test
Programme
Communications-Electronics Security Group
\$112,691.00

VP for Student Services

Fernanda Karp and Julia Curry

IME-BECAS Scholarship Program
IME BECAS
\$43,000.00

Student Academic Success Services

Maureen A. Scharberg

The Ronald E. McNair Post Baccalaureate
Achievement Program
U.S. Department of Education
\$243,000.00

Project Succeed:
2013 Title III Strengthening Institutions Program
U.S. Department of Education
\$449,804.00

Jeannine Slater

Student Support Services (ASPIRE)
U.S. Department of Education
\$428,238.00

Principal Investigators with Highest Award Dollars Received

FY2014-15 (July 1, 2014- June 30, 2015)

1. & 2. Kevin Jordan, Sean Laraway	\$17,576,610
3. James Harvey, et al	\$2,714,540
4. David M. Steele, Rod Diridon	\$2,097,020
5. Jack C. Wall	\$1,715,723
6. Jonathan Geller	\$1,019,393
7. Mark Yarbrough	\$862,704
8. Audra Ruthruff	\$789,340
9. Alice Hines	\$764,189
10. Tzvia Abramson	\$732,264
11. Maureen A. Scharberg	\$692,804
12. Ross Clark	\$687,190
13. Jacob Tsao, Ahmed Hambaba	\$599,642
14. Miri VanHoven	\$544,394
15. Scott Hamilton	\$537,593

Management Discussion

June 30, 2015

This section of the San José State University Research Foundation (the Foundation) annual financial report includes Management's Discussion and Analysis of the financial performance of the Foundation for fiscal year ended June 30, 2015. This discussion should be read in conjunction with the financial statements and notes.

Introduction to San José State University Research Foundation

The Foundation is a not-for-profit benefit corporation founded in 1931 for the purpose of providing support services to the San José State University (University) campus community. These services include:

Sponsored Programs

Sponsored programs represent grants and contracts received from outside sources for research, training, and other activities performed by faculty, staff, and students of the University and the Foundation. These research and other activities enable the campus community to further study fields of interest with funding from external sources.

The Foundation has three major groups of research and training activities; they are located on the San José State University (SJSU) campus, at NASA facilities in Mountain View, and at Moss Landing Marine Laboratories. The Foundation has additional off-site projects throughout the United States and in some foreign countries.

Campus Self-support Programs

Campus self-support programs include numerous non-credit programs and activities that supplement and support the San José State University educational mission. These activities benefit the students, faculty, and the surrounding San José community.

Board Designated Programs

Board designated programs are Foundation funded programs that are used to supplement and support the San José State University educational mission.

Enterprise Programs

Enterprise programs include three business incubator programs that were created by the City of San José Redevelopment Agency. The Foundation was contracted to operate these programs on behalf of the City as they benefit the University and the surrounding community. As of the current year end, all enterprise programs have been discontinued.

Significant Events – Year Ended June 30, 2015

Change in San José State University Management

In July 2015, Mohammad Qayoumi, the president of San José State University (SJSU), announced his separation from SJSU in the middle of August 2015. An interim president was appointed.

Change in Foundation Management

In June 2015, Sandeep Muju was appointed as executive director of the Foundation. Prior to Dr. Muju's appointment, Dr. Pamela Stacks was serving as the Foundation's Interim COO and has now resumed the role of AVP of Research in charge of SJSU's Office of Research on a full-time basis.

Discontinued Operation of a Federal Government Owned Research Vessel (Sponsored Program)

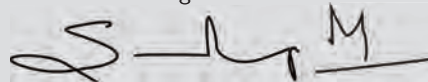
For the past thirty years, the San José State University Research Foundation received funding to operate the Pt. Sur, a research vessel owned by the National Science Foundation (NSF). The Pt. Sur was operated by Moss Landing Marine Laboratories (MLML), San José State University and the Foundation. The operating agreement was a recurrent agreement, renewable approximately every five years. In June 2013, NSF notified the Foundation that NSF has decided to terminate the operating agreement and retire the Pt. Sur by the end of calendar year 2014. This decision was made by a joint committee of the NSF, the Office of Naval Research (ONR), and University-National Oceanographic Laboratory System (UNOLS). Five other vessels in the nation are also facing early retirement.

The Research Vessel Pt. Sur was sold in February 2015 by the Foundation on behalf of NSF to another educational institution. The proceeds from the sale, \$865,379; remain in Research Foundation possession per the agreement with NSF. These funds are restricted for the purposes of retrofitting other MLML vessels with equipment, or other needs for continuity of the marine operations at MLML.

From the Executive Director

For the Foundation FY2014-15 was financially a difficult year with a perfect storm of continued downward slide in revenues while at the same time increases in healthcare and other costs led to higher expenses. These projections overflowed into FY2015-16 as well and therefore our focus from start of FY2015-16 has been on operational efficiencies for cost containment purposes while also stabilizing the

revenue slide. In a typical year the Foundation provides work support for more than 1800 individuals, including faculty, students, research affiliates, and staff. We are stubbornly optimistic about a financial turnaround in FY2015-16 and thereafter we will be increasing our focus on revenue growth activities.



Statement of Activities

(Unaudited)
Fiscal Year 2014-15

REVENUE AND SUPPORT

Federal Contracts and Grants	\$24,777,025
State Contracts and Grants	12,309,040
Other Contracts and Grants	7,334,297
Indirect Cost Recovery-C&G	7,907,405
Administrative and Program Fees	487,003
Gifts and Pledges	1,703,656
Investment Income	314,692
Other Revenue and Support	411,149
Campus Organization Other Revenue and Support	<u>8,122,277</u>
Total Revenue	\$63,366,544

EXPENSES

Program Activities	
Sponsored Programs	\$46,105,571
Board Designated Programs	1,221,481
Enterprise Activities	(1,908)
Campus Organization Expenditures	6,884,806
Support Activities-Management and General	7,755,115
Other Expenses and Transfers	<u>164,767</u>
Total Expenses	\$62,129,832

CHANGE IN NET POSITION	1,236,712
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NET POSITION - Beginning of year	<u>12,403,561</u>
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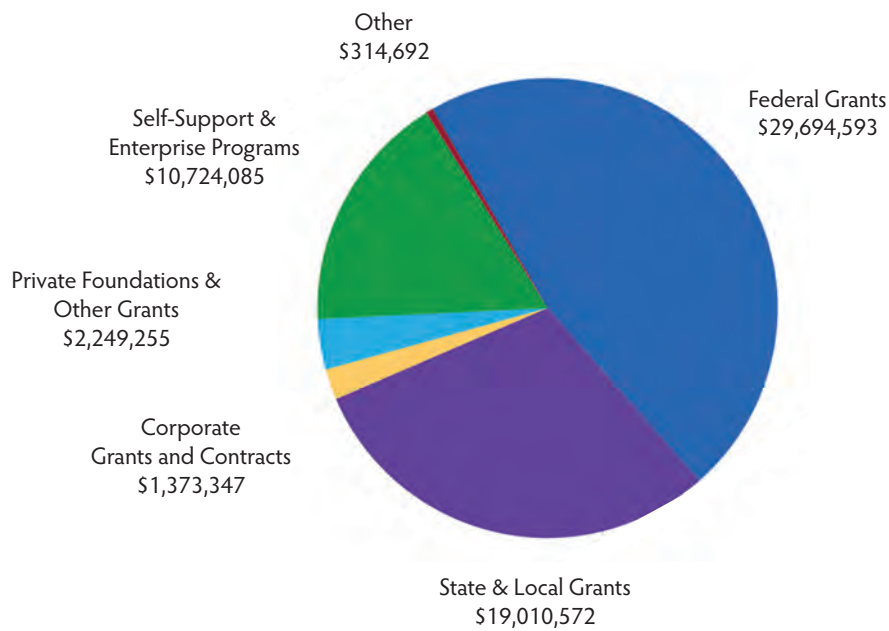
NET POSITION - End of year	<u>\$13,640,273</u>
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Financial Summary

(Unaudited)
Fiscal Year 2014-15

Revenues

\$63,366,544



Fiscal & Audit Management

Active ¹ grants, including multi-year programs total	\$220.0M
Closed ² Grants that closed in past three years: FY11-12; 12-13; 13-14	\$176.6M
SJSURF Owned Properties	\$9.0M
Total (\$ Million)	\$405.6M

1. Fiscal management of active grants, and remain open for Audit by any agency at any time.

2. Grants that closed in past 3 years must remain available for Audit by any agency at any time.

San José State University Research Foundation Board of Directors

From the Administration

Andrew Hale Feinstein

President, SJSU Research Foundation Board
Provost and Vice President, Academic Affairs

Pamela C. Stacks

Vice President,
SJSU Research Foundation Board
Associate Vice President, Research

Josee Laroche

Treasurer, SJSU Research Foundation Board
Interim Vice President,
Administration & Finance

From the Student Body

Zachary Caddick

Department of Psychology

From the Faculty

Marc d'Alarcao

Associate Dean of Research
College of Science

Amy D'Andrade

Associate Dean of Research
College of Applied Sciences & Arts

James Harvey

Director, Moss Landing Marine Laboratories

Walt Jacobs

Dean, College of Social Sciences

Essam Marouf

Associate Dean of Research
College of Engineering

Michael Parrish

Dean, College of Science

From the Community

Terry Austen

Senior Vice President & Area Manager
Kaiser Permanente (Retired)

Executive Director

Sandeep Muju

Legal Counsel

William L. Gates

Spartan Racing Tops 78 teams at Formula SAE Race

Spartan Racing is the student chapter of the Society of Automotive Engineers (SAE), International at San José State University. SAE International is a professional organization composed of over 138,000 engineers primarily in the automotive and aerospace industries. SAE International is tasked with developing design and production standards for these industries based on the professional input of its members.

The objective of the Spartan Racing team, comprised of engineering, business, and arts majors, is to design, manufacture, test, and race a scale Formula-style race car, based on regulations similar to those

imposed on professional motor sport teams. This exercise immerses students in a setting that parallels that of a fast-paced engineering work environment.

In June 2015 Spartan Racing took first place overall at Formula SAE Lincoln, held in Lincoln, Nebraska. SJSU's victory marks the first time in the contest's 35-year history that a California team topped the field of 78 international teams. (See photo below of the team and its vehicle after the win.)

For more information, visit sjsuformulasae.com.



For additional information...

For additional information about projects featured in this report, please visit the links below:

The Mineta Transportation Institute

transweb.sjsu.edu

Pakistan Applied Linguistics Education Enhancement Program (PALEEP)

sjsu.edu/linguistics/paleep/

SJSU Center for Healthy Aging in Multicultural Populations (CHAMP)

sjsu.edu/champ/

SJSU College of Applied Sciences and Arts

Social Work Education Enhancement Project (SWEEP)

blogs.sjsu.edu/casa/tag/sweep/

SJSU Consortium for Stem Cell Internships in Laboratory-based Learning (SCILL)

<http://vireo.biology.sjsu.edu/scill/>

Silicon Valley Healthy Aging Partnership (SVHAP)

www.svhap.org

Silicon Valley Innovation and Entrepreneurship Scholarships (SVIES) Program

engineering.sjsu.edu/students/scholarships/svies

Spartan Superway

transweb.sjsu.edu/project/1227.html

www.engr.sjsu.edu/smssv/

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jamestensuan.wordpress.com

Robert Bain

University Photographer

San José State University

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